

## ABSTRACT

A non-contact gauging system and method profiles a workpiece to accurately determine cylindrical surface profiles. The system includes a sensor head for performing reflected light measurements. The sensor head couples to a sensor arm that is movable in longitudinal, lateral, and transverse directions. A computer controls operation of the sensor head and arm to perform various proximity measurements of the workpiece. Proximity measurements are made along at least three parallel, lateral tracks that extend along a longitudinal length of the workpiece surface. The sensor head takes proximity measurements as it is moved continuously along each lateral track. The computer determines the diameters of the workpiece along the longitudinal length based on the proximity measurements and generates a workpiece profile.